Figure I: Circadian Pattern of Diuresis Rates by Nocturnal Polyuria Syndrome (NPS) Status

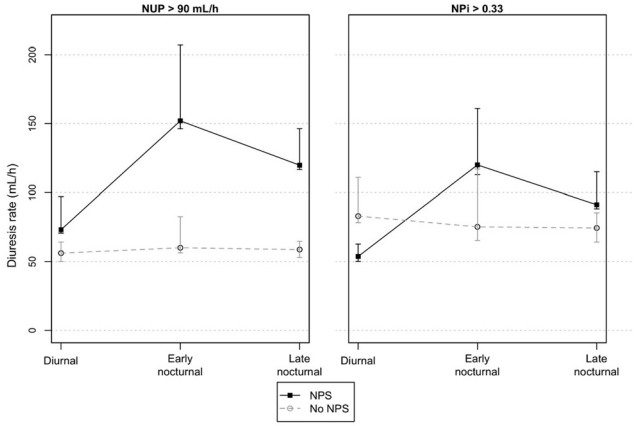

Figure 1: Median diuresis rates with error bars representing 95% confidence intervals. The Wilcoxon signed-rank test was used to determine significance between parameters obtained from the same group. "Diurnal" [(24-hour volume – nocturnal urine volume)/(24 – sleeping hours)] denotes the mean diuresis rate during non-sleep hours; "Early Nocturnal" (First nocturnal voided volume/first uninterrupted sleep period duration) denotes the rate from time to bed until the first nocturnal awakening to void; "Late Nocturnal" [(nocturnal urine volume – first nocturnal voided volume)/(sleeping hours – first uninterrupted sleep period duration)] denotes the rate from after the first nocturnal void until the end of sleep.

Source of Funding: None

PD65-11

NOCTURNAL DIURESIS RATE PATTERNS IN NOCTURNAL POLYURIA SYNDROME AND SECONDARY NOCTURNAL POLYURIA

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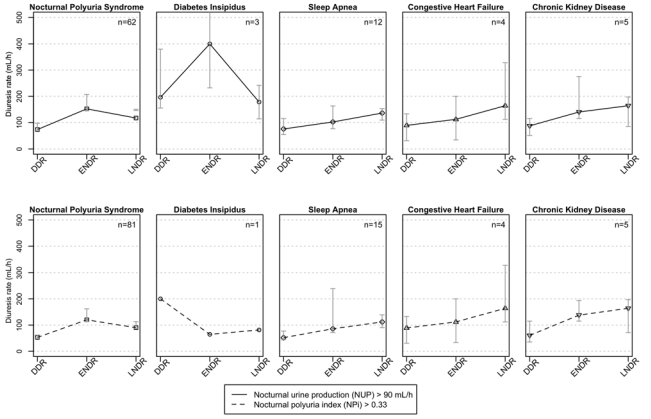
INTRODUCTION AND OBJECTIVES: In this study, we investigate how nocturnal diuresis rates differ at different portions of sleep for 5 different etiologies of nocturnal polyuria (NP) to aid in identifying optimal management strategies for the distinct clinical entities of NP.

METHODS: We retrospectively analyzed a database of voiding diaries from patients managed for nocturia at a Veterans Affairs urology clinic from 2007-2018. The first complete entries were included for males aged ≥18 with clinically-significant nocturia (≥2 nocturnal voids) owing to NP using the two most common definitions of NP: nocturnal urine production [NUP] ≥90 mL/h and nocturnal polyuria index [NPi] ≥0.33. Patients meeting criteria were divided into 5 sub-groups with a single diagnosis of either Nocturnal Polyuria Syndrome (NPS), diabetes insipidus (DI), obstructive sleep apnea (OSA), congestive heart failure (CHF), and chronic kidney disease (CKD). NPS was defined as NP in the absence of all aforementioned diagnoses. Early nocturnal diuresis rate (ENDR), defined as first nocturnal voided volume/first uninterrupted sleep period, late nocturnal diuresis rate (LNDR), defined as remaining nocturnal urine volume/remaining hours of sleep, and diurnal diuresis rate (DDR), defined as daytime urine volume/hours awake, were calculated and displayed with Wilcoxon confidence intervals in Figure 1.

RESULTS: At both NUP ≥90 mL/h and NPi ≥0.33, patients with NPS demonstrated an increase in diuresis rate during the early portion of sleep, followed by a decline in the latter portion of sleep, which followed the same pattern for patients with DI with NP defined as NUP ≥90 mL/h. Only 1 patient was identified with DI and NP defined as NPi ≥0.33 following inclusion and exclusion criteria. At both NUP ≥90mL/h and NPi ≥0.33, patients with OSA, CHF, and CKD were observed to have a gradual increase in diuresis rate from early nocturnal to the late nocturnal period.

CONCLUSIONS: Patients with NPS and DI exhibited an early nocturnal surge in diuresis rate, followed by a decline in the latter portion of sleep. In contrast, patients with NP of cardiogenic and renal etiology displayed a gradual increase in diuresis rate from the early to latter portion of sleep. Nocturia interventions may vary according to the differing underlying mechanisms in these subtypes of nocturnal polyuria.

Figure I: Circadian Pattern of Diuresis Rates by Nocturnal Polyuria Etiology



Source of Funding: none

PD65-12

SALT INTAKE REDUCTION AS A TREATMENT OPTION FOR OVERACTIVE BLADDER

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INTRODUCTION AND OBJECTIVES: Although overactive bladder (OAB) is primarily treated using anticholinergic drugs and β3 adrenergic stimulants, patients are concerned regarding adverse events like dysuria, dry mouth, constipation, and fluctuation of blood pressure, and there is a particular desire for the emergence of safe treatments for elderly patients.

Chronic high salt intake is closely related to lifestyle diseases, such as hypertension and diabetes, which have a significant influence on the development of OAB. However, there are no studies that examine the impact of salt reduction, a representative element of lifestyle disease, on the OAB symptoms. This study aimed to analyze the therapeutic effect of reducing salt intake in OAB patients.

METHODS: The subjects were OAB patients with excessive salt intake (≥8 g/day for men and ≥7 g/day for women). OAB was defined as an overactive bladder symptom score (OABSS) of ≥2 points for Q3 (urgency) and a total score of ≥3 points. The subjects were provided nutrition guidance related to salt reduction every four weeks using brochures. We prospectively examined urinary symptoms at the start of salt reduction and 12 weeks into salt reduction using OABSS and the frequency volume chart (FVC). The daily salt intake was estimated by examining the sodium and creatinine concentrations of spot urine samples using a formula that was adjusted for body height, body weight, and age. Value of $P<0.05$ was considered statistically significant.

RESULTS: A total of 98 subjects (52 men), with a mean age of 66.7 ± 11.5 years were evaluated. During the observation period, 71 subjects (72.4%) achieved salt reduction (Success [S] Group), while 27 subjects (27.6%) did not (Failure [F] Group].

With respect to the OABSS, the S Group demonstrated an improvement in not only Q1 (daytime frequency) and Q2 (nocturia) from 1.2 ± 1.0 to 0.6 ± 1.0 ($P<0.001$) and from 2.1 ± 0.5 to 1.4 ± 0.7 ($P<0.001$), respectively, but also in Q3 (urgency), Q4 (urgency incontinence), and total score from 2.3 ± 0.5 to 2.0 ± 0.7 ($P<0.001$), from 1.3 ± 1.0 to 1.1 ± 1.0 ($P=0.003$), and from 6.9 ± 1.0 to 5.1 ± 2.2 ($P<0.001$), respectively. With respect to FVC, the S group showed improvement in voided volume from 247.8 ± 25.1 mL to 260.4 ± 32.6 mL ($P<0.001$), and nocturia from 2.5 ± 1.0 times to 1.6 ± 0.9 times ($P<0.001$). The F group showed no improvement in any of the parameters of OABSS and FVC.